

# BARNES & THORNBURG

Kari Evans  
(317) 231-7498  
Email: kevens@btlaw.com

OFFICE  
OF  
WATER MANAGEMENT  
IDEM

JUL 2 2 03 PM '02

11 South Meridian Street  
Indianapolis, Indiana 46204-3535 U.S.A.  
(317) 236-1313  
Fax (317) 231-7433  
[www.btlaw.com](http://www.btlaw.com)

July 1, 2002

*Via Facsimile and U.S. Mail*

#02-138 (WPCB) [Mercury Variance]  
Mary Ann Stevens  
Rules Section, Office of Water Quality  
Indiana Department of Environmental Management  
100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015

## OFFICIAL COMMENT

RE: Indiana Water Quality Coalition Comments on First Notice of Comment  
Period to Develop a Statewide Mercury Variance Rule

Dear Ms. Stevens:

On June 1, 2002, the Indiana Department of Environmental Management ("IDEM") published a first notice of comment period in the Indiana Register to initiate a rulemaking to develop a statewide variance from the mercury water quality criteria. The Indiana Water Quality Coalition provides these comments to assist IDEM in development of rule language for the first notice of comment period. The Indiana Water Quality Coalition is a group of businesses with shared interests in Indiana regulations, policies and operating procedures concerning water quality. The members of the Indiana Water Quality Coalition include: Indiana Coal Council, Indiana Builders Association, Indiana Manufacturers Association, Hoosier Energy, NiSource Inc., Jefferson Smurfit Corporation, BP, American Electric Power, and Eli Lilly and Company. Each of the members is a major user of the State's water resources and is concerned with how mercury criteria and associated variances will be implemented. It is for these reasons that the Indiana Water Quality Coalition is providing comments on the first notice for the statewide mercury variance.

As a general matter, the Indiana Water Quality Coalition supports adoption of a rule to provide a statewide variance from the mercury water quality criteria. Variances from water quality criteria are typically granted on an individual basis, after considering case-specific factors concerning a discharger's technical and/or economic inability to comply with a particular criterion. Each situation presents unique factors, and thus the application process requires a great deal of information specific to the circumstances of each discharger. In contrast to this usual variance situation, there are many common factors concerning the inability of most dischargers to comply with permit effluent limitations based on mercury water quality criteria. All dischargers face the same obstacles: mercury is ubiquitous in the environment and it very costly to remove from wastewater. As a result, it is beneficial to establish a statewide mercury variance

OFFICE OF THE ATTORNEY GENERAL  
JUL 2 2 03 PM '02

that recognizes these similarities and allows a streamlined process that eliminates the intensive and difficult economic hardship demonstration associated with individual variances. Thus, rather than making an individual variance application, each discharger must show that it meets the qualifications for the statewide mercury variance. Such a rule would provide an efficient way to deal with a widespread compliance issue, while at the same time establishing adequate procedures to ensure that dischargers meet certain qualifications to obtain the variance and take reasonable measures to minimize mercury discharge levels.

The water quality criteria for mercury are different outside and within the Great Lakes system. Outside of the Great Lakes system, the most stringent criterion is the chronic aquatic life criterion, which is 12 ng/l. Within the Great Lakes system, the wildlife criterion is the most stringent: 1.3 ng/l; the human health criterion is 1.8 ng/l. Compliance with these criteria did not become an issue until 1999, when U.S. EPA adopted Analytical Method 1631. The previous analytical method had a limit of quantification ("LOQ") of 500 ng/l and a limit of detection ("LOD") of 200 ng/l, which are an order of magnitude greater than the most stringent non-Great Lakes criterion and two orders of magnitude greater than the most stringent Great Lakes criterion. In this situation, where the criteria and associated permit limitations are below the LOQ, compliance was demonstrated if the monitoring result was below the LOQ. In fact, effluent limitations in NPDES permits were often established at the LOQ of 500 ng/l.

The LOQ for Analytical Method 1631 is 0.5 ng/l; the LOD is 0.2 ng/l. For the first time, it is possible to determine whether water bodies meet the applicable mercury criterion and whether discharges will comply with effluent limitations derived from the criterion. As a result, IDEM and dischargers are facing the first round of permitting with the ability to measure mercury levels below the water quality criteria and associated effluent limitations. Based on findings to date, it is very likely that mercury in measurable concentrations above the criterion levels will be found in many lakes, rivers and wastewater discharges.

This quantification of mercury levels in Indiana waters and several related issues drive the need for special variance procedures for mercury wastewater discharges.

1. Mercury is a pervasive, persistent substance.

Since Analytical Method 1631 became available, dischargers, regulators and other parties in Indiana and across the country have been monitoring and analyzing water bodies and effluents. There has also been a great deal of research into sources of mercury, both to water bodies and to wastewater treatment facilities. The results confirm a circumstance that had long been suspected: mercury is pervasive and persistent in the environment. As an element, it cannot be created or destroyed, but only transferred to different media and/or forms.

We now know that water bodies throughout Indiana contain background levels of mercury. For waters in the Great Lakes system, the geometric mean of samples often exceed the wildlife and human health criteria. Studies of Lake Michigan itself show mercury levels in the range of 0.46 to 2.48 ng/l. U.S. EPA estimates that approximately 86 percent of the mercury

Lake Michigan receives each year comes from atmospheric deposition.<sup>1</sup> Outside of the Great Lakes system, studies have show background levels ranging from 3.22 to 5.04 ng/l for the Wabash River and 1.59 to 3.34 ng/l for the Ohio River. These measured ambient levels are generally above the Great Lakes wildlife and human health criteria, which places into perspective the need for a statewide mercury variance.

Many facilities use surface water bodies as intake water. Permitting issues and potential compliance concerns related to background concentrations of mercury are coming to light. For example, IDEM has recently issued NPDES permits to two new power plants, each of which proposed to use a nearby water body as its source of noncontact cooling water and recirculate the intake water multiple times through cooling towers. This recirculation concentrates substances such as mercury because water evaporates to the atmosphere in the cooling process. In both cases, testing showed that the concentration of mercury in the intake water did not exceed 12 ng/l, the criterion applicable to the waterbodies. Moreover, neither facility will add any additional mass of mercury, and in fact would likely remove a significant amount of mercury when reducing suspended solids necessary for proper operation of the noncontact cooling water system. However, as a result of the increase in mercury concentration as water evaporates in the cooling system, the ultimate discharge would have the reasonable potential to cause or contribute to a concentration-based exceedance of the criterion in the receiving water body. As a result, IDEM imposed concentration-based mercury limits on each facility, even though the mass loading will not increase above the pre-existing mass loading in the intake water. The impact of this approach could be significant without the availability of a statewide mercury variance. Facilities with wastewater heat discharges to Lake Michigan exceeding a daily average of 500 million British thermal units must install cooling towers.<sup>2</sup> Further, the new Clean Water Act Section 316(b) cooling water intake structure regulations likely will significantly increase the use of cooling towers.

Dischargers also know or are discovering that many of their raw materials contain measurable amounts of mercury. In many cases, mercury is not purposefully added, but rather is present as a natural constituent of the material. In certain cases, it is possible to substitute these materials with products containing no mercury (or at least not enough mercury to trigger reasonable potential). However, product substitution is not always possible. For example, mercury is naturally present in crude oil, coal and crop foods. Facilities that process or otherwise use these materials in their manufacturing processes will not be able to make raw material substitutions.

2. Available technology to remove mercury in wastewater treatment plants has not been demonstrated to achieve the water quality criteria.

There is very little information available concerning treatment technologies able to remove mercury from wastewater to concentrations in the range of the applicable water quality

---

<sup>1</sup> Lake Michigan Mass Balance Results, [www.epa.gov/glnpo/lmmb/loadings.html](http://www.epa.gov/glnpo/lmmb/loadings.html).

<sup>2</sup> See 327 IAC 2-1.5-8(c)(4)(D)(v).

criteria. This situation exists because until the advent of Analytical Method 1631, it simply wasn't possible to test whether mercury could be removed to these very low concentrations. Ion exchange is considered to be the best available method for removal of low levels of mercury in wastewater, and manufacturers of ion exchange systems will only guarantee final effluent concentrations of 0.3 to 5.0 ug/l, which is two to four orders of magnitude above the water quality criteria. Guaranteed concentrations for other treatment technologies, including activated carbon filtration and reverse osmosis, are an order or orders of magnitude greater than ion exchange. While it is likely that the removal efficiency of the treatment technologies will eventually catch up to Analytical Method 1631 and the mercury water quality criteria, this process will take time. Until it occurs, dischargers will not be able to know whether any currently available treatment technology will allow them to achieve effluent limitations based on the mercury water quality criteria.

3. Available technology to remove mercury in wastewater treatment plants is prohibitively expensive.

As stated in the previous section, ion exchange comes closer than any other treatment technology to achieving effluent limitations based on the mercury water quality criteria. Dischargers are just beginning to evaluate costs associated with this type of mercury treatment, and are discovering that it will be prohibitively expensive. For example, in the July 2001 supplement to its June 1998 variance application, the City of Indianapolis determined that the capital costs to install ion exchange, coupled with a carbon absorption pretreatment process to prevent biofouling of the ion exchange unit, would be \$892 million, and annual operation and maintenance costs would be \$80 million. These costs equal \$164.9 million in annualized costs, or \$5.5 million for each pound of mercury removed. To pay these costs, Indianapolis would need to increase residential sewer fees by \$71.86 each month, and nonresidential sewer fees by \$989.70 a month. These increases are not affordable by any measure.

Industries in the Great Lakes system are beginning to analyze costs associated with using treatment technologies to attempt to meet the 1.3 ng/l wildlife criteria. We understand that these costs will be much higher than those estimated by Indianapolis. For example, the economic analysis performed by the State of Ohio determined that the average cost to reduce mercury below 12 ng/l from a wastestream through end-of-pipe treatment would exceed \$10 million per pound of mercury removed. This cost finding was a major reason Ohio developed a statewide mercury variance as part of its Great Lakes water quality regulations.

4. Adverse multimedia impacts are associated with available mercury removal technology.

Technologies to remove mercury from wastewater will have significant impacts to other media. A treatment process consisting of carbon absorption followed by ion exchange will require substantial energy use. Indianapolis estimated that 52.6 million kilowatt-hours a year would be consumed. This energy use almost equals the total current energy needs of the Belmont facility, one of Indianapolis' two treatment plants, which uses 62 million kilowatt-hours a year. Mercury treatment also will cause impacts to land in the form of solid waste to be disposed in landfills, and land use as the technologies will occupy large property areas.

5. It will take time to realize the benefits of mercury pollution prevention and minimization efforts.

Pollution prevention and minimization hold promise for cost effective control of mercury. However, for most dischargers it will take many years to implement pollution prevention and minimization strategies and to achieve the resulting benefits of decreased mercury levels. A key element of an appropriate mercury variance rule requires development and implementation of a pollutant minimization plan ("PMP") during the duration of the variance, so that efforts are made to reduce mercury discharges over time.

6. It will be costly for dischargers in the State to prepare applications for individual variances from the mercury water quality criteria.

If a statewide mercury variance is not made available to dischargers, many will need to apply for individual variances from the mercury water quality criteria. The individual variance application, review and approval process for all of these dischargers will be costly and time consuming, and simply is not necessary. The following information provides a conservative estimate of the costs associated with preparing a single individual mercury variance application.

Number and Cost of Assays Required:

6 effluent assays, with one blank and one duplicate per assay

18 assays at \$60 per assay = \$1080

Number of Sampling Events Required:

6 sampling events at \$200 per collection of each sample = \$1200

Cost to Prepare Individual Variance Application:

350 hours at \$80 per hour = \$28,000

**Total per facility: \$30,280**

It is very likely that a larger number of the 1,734 NPDES dischargers in the State will need to obtain variances from the mercury water quality criteria. If only one quarter, or approximately 430, of these facilities applies for an individual variance, total costs just for making the application would be **over \$13 million**. Based on the costs associated with preparing other variance applications, we believe this cost estimate is quite conservative, and underestimates the true costs associated with individual mercury variance applications. We also are not sure of the time and costs associated with IDEM's review of the variance application, and thus have not included estimates of these costs. However, these cost would increase the total.

Dischargers throughout the State face difficulties with each of the issues described above. As a result, it is beneficial to develop a statewide mercury variance that recognizes these commonalities and eliminates the burdens associated with preparing and reviewing individual variance applications. We recommend that IDEM use the statewide mercury variance language incorporated in the February 1999 second notice draft Triennial Review rulemaking. *See* 22 Ind. Reg. 1733-34, draft 327 IAC 2-1.6-16. This draft language is based on Ohio's statewide mercury variance rule, which was approved by U.S. EPA as part of Ohio's Great Lakes rulemaking. The framework established in the draft rule language contains the necessary elements for a statewide mercury variance: a statewide economic analysis and finding that treatment costs are prohibitively expensive; a clear and streamlined list of information that must be provided to qualify for the variance; and a reasonable set of conditions to accompany granting of the variance.

IDEM should make the following revisions to and considerations concerning the statewide mercury variance language in the 1999 Triennial Review draft:

- The threshold long term average effluent concentration level to qualify for the statewide variance should be in the range of 30 to 40 ng/l, rather than 12 ng/l. The originally proposed threshold level is equal to the most stringent non-Great Lakes water quality criterion, and is simply too low to use as a level by which dischargers will be disqualified from use of the special mercury procedures. As discussed above, there will be many circumstances where intake water and/or raw materials will prevent attainment of mercury effluent concentrations at or below 12 ng/l. A threshold in the range of 30 to 40 ng/l is more in line with these circumstances and will allow greater participation in the mercury variance process.
- The backsliding prohibition in 327 IAC 5-2-10(11) generally disallows issuance of permit limits that are less stringent than the limits in the previous permit. Antibacksliding should not present obstacles to use of the mercury variance. Most dischargers currently do not have mercury limits. Of those dischargers that do have limits, many are based on the LOD of the old analytical method: 500 ng/l. A small number of dischargers recently have been issued limits, but each of them has a compliance schedule with an associated interim limit of 500 ng/l. Finally, even if a discharger faced compliance with effluent limitations based on the applicable criterion of 1.3 ng/l or 12 ng/l, it would likely meet the backsliding exception concerning technical inability to achieve these limits.
- An important aspect of the statewide mercury variance is a determination that the costs associated with treating mercury impose an undue hardship and burden upon dischargers and would cause substantial and widespread social and economic impacts. The economic impact portion of Ohio's statewide mercury variance was based on a thorough analysis of the costs associated with complying with the Great Lakes mercury criteria. IDEM should use this analysis as its starting point, and supplement it with Indiana-specific information.
- We urge IDEM to adopt an aggressive schedule for completion of this rulemaking effort. Permits currently are being issued with mercury effluent limitations and other conditions. A

July 1, 2002

Page 7

OFFICE  
OF  
WATER MANAGEMENT  
IDEM  
JUL 2 2 00 PM '02

mercury variance needs to be put in place before dischargers face compliance concerns that will necessitate issuance of individual variances for mercury. It should be possible for final adoption of a rule to occur in less than one year of publication of the first notice, and we believe IDEM should establish this timeline as its goal.

A sound mercury variance rule will provide a cost-effective and efficient process for addressing the widespread compliance issues associated with the mercury water quality criteria. We support IDEM's efforts, and look forward to working with the agency, the Water Pollution Control Board and other stakeholders to ensure adoption of a rule consistent with our comments. If you have any questions about the information presented in this letter or would like additional information, please call me at 317/231-7498.

Sincerely,



Kari A. Evans

cc: Tim Method  
Mary Ellen Gray  
Jon Mangles  
Lonnie Brumfield  
Members of Indiana Water Quality Coalition